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## NOTICE OF ALLOWANCE AND FEE(S) DUE

74365

7590

01/08/2010

Slater & Matsil, L.L.P.  
17950 Preston Road, Suite 1000  
Dallas, TX 75252

EXAMINER

BENZON, GREG C

ART UNIT

PAPER NUMBER

2444

DATE MAILED: 01/08/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/502,543	07/27/2004	Peng Zhou	HW 0210031	7543
TITLE OF INVENTION: SYSTEM AND IMPLEMENTATION METHOD OF CONTROLLED MULTICAST				

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	04/08/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

## HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

# **PART B - FEE(S) TRANSMITTAL**

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**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/502,543 07/27/2004 Peng Zhou HW 0210031 7543

TITLE OF INVENTION: SYSTEM AND IMPLEMENTATION METHOD OF CONTROLLED MULTICAST

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	04/08/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
BENGZON, GREG C	2444	709-205000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB-122) attached.  
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB-47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1  
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2  
 3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee  
☐ Publication Fee (No small entity discount permitted)  
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4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_  
 Typed or printed name \_\_\_\_\_ Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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BENZON, GREG C				
ART UNIT			PAPER NUMBER	
2444				

DATE MAILED: 01/08/2010

Slater & Matsil, L.L.P.  
17950 Preston Road, Suite 1000  
Dallas, TX 75252

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 878 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 878 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

# Notice of Allowability

## Application No.

10/502,543

## Examiner

GREG BENZON

## Applicant(s)

ZHOU ET AL.

## Art Unit

2444

### - The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment/Req. Reconsideration-After Non-Final Reject filed 10/23/2009.
2. ☒ The allowed claim(s) is/are Claims 1-3,5-9,11-17 renumbered Claims 1-15 respectively.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of the:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.  
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  
1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.  
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.  
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

/Yemane Mesfin/  
Primary Examiner, Art Unit 2444

***Allowable Subject Matter***

Claims 1-3,5-9,11-17 are allowed.

The following is an examiner's statement of reasons for allowance:

The provision for --- a controlled multicast system, comprising: an Ethernet switch; a multicast router, wherein:

the Ethernet switch connects with each of a plurality of hosts in a downlink, and connects with the multicast router in an uplink,

the multicast router connects with a multicast router of other systems in the uplink, the Ethernet switch implementing multicast exchange of a layer 2, and an IGMP V2 protocol is adopted as group management protocol between the Ethernet switch and the host;

wherein the controlled multicast system further comprises:

a portal server, connecting with the multicast router and providing an interface of user access authentication;

an authentication server, storing configuration of privilege for the host which wants to join in the multicast group;

wherein:

the multicast router and the authentication server are configured to adopt a Client- server structure by which the authentication server authenticates identification of the host to join in a multicast group with information inputted through the interface

provided by the portal server, and

*the multicast router records a User ID and a vlan ID corresponding to the User ID of the authenticated host and then distributes control commands according to results of the authentication to control multicast forwarding operations of the Ethernet switch;*

configuration of privilege comprises a corresponding relation between the User ID of the host and a address of multicast group in which the host wants to join;

the information inputted through the interface provided by the portal server comprises the User ID and a password;

*each port through which the host is connected to the Ethernet switch is a vlan*

wherein the authentication server in the system further for, after receiving an extended RADIUS authentication message from the multicast router, of which attributes include the User ID as the user name and the address of multicast group in which the host wants to join, detecting whether to accept the host joining in the multicast group based on the configuration of privilege;

responding with an acceptance message to the multicast router if the host has suitable privilege, otherwise returning a reject message;

wherein the multicast router in the system further for, after receiving an IGMP Membership Report message from the Ethernet switch, *according to the vlan ID in the message, searching the corresponding User ID in a multicast access privilege table of the multicast router,* and then sending the said extended RADIUS authentication message, to the authentication server;

after receiving the acceptance message from the authentication server, *writing*

the address of the multicast group in which the host can join into the said multicast access privilege table, and implementing a routine disposal on join messages of the host, then generating a Join message, which comprises the vlan ID corresponding to the port that links with the host which wants to join in the multicast group, the address of the multicast group that is applied for, and a Join command field, and then transmitting to the Ethernet switch; moreover, completing a routine processing of creating multicast forwarding tree on the IGMP Membership Report message; doing nothing after receiving the reject message;

the Ethernet switch for, forwarding the IGMP Membership Report message from the host, wherein the IGMP Membership Report message forwarded to the multicast router port carries with the vlan ID of the host;

after receiving the Join message from the multicast router, searching the MAC address corresponding to the address of the multicast group in the forwarding table; if the entry corresponding with the MAC address is found, obtaining the port number of the host via searching in the forwarding table with the vlan ID in the Join message, and then adding the port number into the said entry; if nothing is found, adding an entry in the forwarding table, which comprises the MAC address corresponding to the multicast address, the port number of the host which applies to join in the multicast group, and the port number of the multicast router connected with the Ethernet switch;

after receiving a multicast flow from the multicast router, forwarding it to ports of the Ethernet switch with the current forwarding table

--- wherein all the features previously described are combined in one singular embodiment, is not fairly taught or suggested by the prior art of record.

The Examiner finds particular novelty in the multicast system implemented using IGMP messaging as described in the Applicant Specification (page 10, paragraphs 1, figure 7 ) wherein the said multicast router and Ethernet switch each maintain separate lookup tables and are working in combination to ensure that only a specific, distinct authorized user can join in the multicast group; through one-to-one relationship among the port, the user and the vlan ID. The multicast switch, after receiving an IGMP Membership Report message from the Ethernet switch, according to the vlan ID in the message, searching the corresponding User ID in a multicast access privilege table of the multicast router, and then sending the said extended RADIUS authentication message, to the authentication server. The multicast router determines user privilege from an AAA server and upon receiving the acceptance message, the multicast router will record the address of the multicast group (Page 12) where the user can join into the multicast access privilege table of the user. Meanwhile the Ethernet switch (LAN Switch) classifies the vlan according to the ports, each of which connects with one user, and records said information in a VLAN/Port table. (Page 12)

The multicast routers generates and transmits the HGMP Join message to the switch, which comprises the vlan number (vlan 1) of the host which applies to join in the



multicast group, the address (224.1.2.3) of the multicast group in which the host applies to join.

The Ethernet switch obtains the correct port number of the host through searching said VLAN table using the vlan ID in the Join message.

Fukutomi disclosed a CE router having a LAN interface in combination with said IGMP Proxy processing section and packet relay processing section that is equivalent to an Ethernet switch. Fukutomi Paragraph 106 describes wherein the CE router performs a relay operation between the user PC and PE router ('*multicast router*'). Thus the Fukutomi CE router having a LAN interface in combination with said IGMP Proxy processing section and packet relay processing section is enabled to function for forwarding multicast packets while adapting to the IGMP protocol. The Examiner notes that while Fukutomi describes an embodiment wherein the CE router is connected to one host Fukutomi is not limited to this embodiment.

However Fukutomi did not disclose the multicast router receiving an IGMP Membership Report message from the Ethernet switch, and according to the vlan ID in the message, searching the corresponding User ID in a multicast access privilege table of the multicast route.

However Fukutomi did not disclose wherein the Ethernet switch classifies the vlan according to the ports, each of which connects with one user, and records said information in a VLAN/Port table. Fukutomi did not disclose obtaining the correct port

number of the host through searching said VLAN table using the vlan ID in the Join message.

Haggerty disclosed a multicast system implemented using IGMP messaging.  
(Haggerty-Column 4 Lines 55-65)

However Haggerty did not disclose the multicast router receiving an IGMP Membership Report message from the Ethernet switch, and according to the vlan ID in the message, searching the corresponding User ID in a multicast access privilege table of the multicast route.

However Haggerty did not disclose wherein the multicast router generates and transmits the HGMP Join message to the switch, which comprises the vlan number of the host which applies to join in the multicast group, the address of the multicast group in which the host applies to join. Haggerty did not disclose wherein the Ethernet switch classifies the vlan according to the ports, each of which connects with one user, and records said information in a VLAN/Port table. Haggerty did not disclose obtaining the correct port number of the host through searching said VLAN table using the vlan ID in the Join message.

Dobbins disclosed a multicast forwarding table implemented in a VLAN Ethernet switch such that multicast packets are sent only to ports defined for a particular VLAN.  
(Dobbins-Column 2 Lines 50-65) Tables are maintained for mapping the VLAN-IDs with

associated end systems and access ports. When a broadcast packet is received at a first switch, it is encapsulated with a VLAN header, including the VLAN-IDs, and sent out a multicast channel to all other switches in the network (domain).

However Dobbins did not disclose transmitting an IGMP Membership Report message from the Ethernet switch to a multicast router.

However Dobbins did not disclose wherein the multicast router determines user privilege from an AAA server and upon receiving the acceptance message, the multicast router will record the address of the multicast group where the user can join into the multicast access privilege table of the user. Dobbins did not disclose wherein the multicast router generates and transmits the HGMP Join message to the switch, which comprises the vlan number of the host which applies to join in the multicast group, the address of the multicast group in which the host applies to join. Dobbins did not disclose obtaining the correct port number of the host through searching said VLAN table using the vlan ID in the Join message.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREG BENGZON whose telephone number is (571)272-3944. The examiner can normally be reached on Mon. thru Fri. 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Vaughn can be reached on (571)272-3922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/G. B./  
Examiner, Art Unit 2444

/Yemane Mesfin/  
Primary Examiner, Art Unit 2444